

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A ~~voltage control circuit~~device which provides a test supply voltage during manufacturing and testing of a semiconductor device and an operational supply voltage after certification of the semiconductor device, the operational supply voltage being lower than the test supply voltage, the ~~voltage control circuit~~device comprising:

a clamp circuit having a plurality of voltage regulation devices, the voltage regulation devices controlling a clamping threshold of the clamp circuit, wherein the clamping circuit is configured to allow an output to track an input below a clamping maximum;

a voltage regulator electrically coupled to the clamp circuit which generates a first control signal responsive to the clamping threshold of the clamp circuit;

a control circuit electrically coupled to the voltage regulator circuit which generates a second control signal responsive to the first control signal;

a charge pump which receives the second control signal from the voltage regulator control circuit, the charge pump generating the test supply voltage; and

at least one bypass device connected to at least one of the plurality of voltage regulation devices, wherein the at least one bypass device is activated following the certification of the semiconductor device to bypass the at least one of the plurality of voltage regulation devices ~~from~~of the clamp circuit to lower the clamping threshold of the clamp circuit, the voltage regulator generating a ~~second~~third control signal responsive to the lowered clamping threshold of the clamp circuit to cause the charge pump to generate the operational supply voltage.

2. (Currently Amended) The ~~voltage control circuit~~device of Claim 1, wherein the plurality of voltage regulation devices comprise diodes.

3. (Currently Amended) The ~~voltage control circuit~~device of Claim 2, wherein the diodes are implemented through transistors.

4. (Currently Amended) A voltage-control-circuit-device which provides a test supply voltage during manufacturing and testing of a semiconductor device and an operational supply voltage after certification of the semiconductor device, the operational supply voltage being lower than the test supply voltage, the voltage-control-circuit-device comprising:

a clamp circuit having a plurality of voltage regulation devices, the voltage regulation devices controlling a clamping threshold of the clamp circuit, wherein the clamping circuit is configured to allow an output to track an input below a clamping maximum;

a voltage regulator electrically coupled to the clamp circuit which generates a first control signal responsive to the clamping threshold of the clamp circuit;

a control circuit electrically coupled to the voltage regulator circuit which generates a second control signal responsive to the first control signal;

a charge pump which receives the second control signal from the voltage regulator control circuit, the charge pump generating the test supply voltage; and

at least one bypass device connected to at least one of the plurality of voltage regulation devices, the bypass device comprising a fuse in series with a transistor, wherein the at least one bypass device is activated following the certification of the semiconductor device to bypass the at least one of the plurality of voltage regulation devices ~~from of~~ the clamp circuit to lower the clamping threshold of the clamp circuit, the voltage regulator generating a ~~second~~third control signal responsive to the lowered clamping threshold of the clamp circuit to cause the charge pump to generate the operational supply voltage.

5. (Currently Amended) The voltage-control-circuit-device of Claim 4, wherein bypass device is activated by blowing the fuse.

6. (Currently Amended) The voltage-control-circuit-device of Claim 1, wherein the value of the operational supply voltage is reduced for each voltage regulation device bypassed.

7. (Currently Amended) The ~~voltage control circuit~~device of Claim 1, wherein the voltage regulation devices limit the maximum voltage output of the clamp circuit.

8. (Currently Amended) The ~~voltage control circuit~~device of Claim 1, wherein the first control signal reduces the test supply voltage when the voltage regulation devices limit the output of the clamp circuit.

9. (Currently Amended) The ~~voltage control circuit~~device of Claim 1, wherein the ~~second~~third control signal reduces the operational supply voltage when the non-bypassed voltage regulation devices limit the output of the clamp circuit.

10. (Currently Amended) A ~~voltage control circuit~~device which provides a test supply voltage during manufacturing and testing of a semiconductor device and an operational supply voltage after certification of the semiconductor device, the operational supply voltage being lower than the test supply voltage, the ~~voltage control circuit~~device comprising:

means for controlling an output of a clamp circuit, wherein the clamping circuit is configured to allow an output to track an input below a maximum;

means for generating a first control signal based upon the output of the clamp circuit;

means for generating a second control signal responsive to the first control signal;

means for generating the test supply voltage responsive to the second control signal;

means for limiting the output of the clamp circuit;

means for generating a ~~second~~ third control signal based upon the limited output of the clamp circuit; and

means for generating the operational supply voltage.

11. (Currently Amended) The ~~voltage control circuit~~device of Claim 10, wherein the control means comprise diodes.

12. (Currently Amended) The ~~voltage control circuit~~device of Claim 11, wherein the diodes are implemented through transistors.

13. (Currently Amended) The ~~voltage control circuit~~device of Claim 10, wherein the limiting means comprises a fuse.

14. (Currently Amended) The ~~voltage control circuit~~device of Claim 10, wherein the limiting means comprises a transistor.

15. (Currently Amended) A ~~voltage control circuit~~device comprising:
a clamp circuit having a plurality of voltage regulation devices, the voltage regulation devices controlling a clamping threshold of the clamp circuit, wherein the clamping circuit is configured to allow an output to track an input below a clamping maximum;

a voltage regulator electrically coupled to the clamp circuit, the voltage regulator generating a first control signal responsive to the clamping threshold of the clamp circuit;

a control circuit electrically coupled to the voltage regulator circuit which generates a second control signal responsive to the first control signal;

a charge pump electrically coupled to the voltage regulator control circuit, the charge pump generating a voltage in response to the second control signal from the voltage regulator control circuit; and

at least one bypass device connected to at least one of the plurality of voltage regulation devices, wherein the at least one bypass device is reversibly activated to reversibly bypass the at least one of the plurality of voltage regulation devices ~~from~~of the clamp circuit, thereby modifying the clamping threshold of the clamp circuit.

16. (Currently Amended) The ~~voltage control circuit~~device of Claim 15, wherein the bypass device comprises a fuse in series with a control terminal of a transistor.

17. – 24. (Canceled)

25. (Currently Amended) A ~~voltage control circuit device~~ for a semiconductor device, the voltage control circuit generating an internal supply voltage within the semiconductor device, the internal supply voltage derived from an external supply voltage that varies over a range of magnitudes, the ~~voltage control circuit device~~ comprising:

a clamp circuit having a plurality of voltage regulation devices, the voltage regulation devices controlling a clamping threshold of the clamp circuit, wherein the clamping circuit is configured to allow an output to track an input below a clamping maximum;

a voltage regulator electrically coupled to the clamp circuit which generates a first control signal responsive to the clamping threshold of the clamp circuit;

a control circuit electrically coupled to the voltage regulator circuit which generates a second control signal responsive to the first control signal;

a charge pump which receives the second control signal from the voltage regulator control circuit, the charge pump generating the internal supply voltage from the external supply voltage, the internal supply voltage varying in response to changes in the magnitude of the external supply voltage and having a magnitude greater than the magnitude of the external supply voltage by a differential magnitude responsive to the clamping threshold of the clamp circuit; and

at least one bypass device connected to at least one of the plurality of voltage regulation devices, wherein the at least one bypass device is activated following testing of the semiconductor device to bypass the at least one of the plurality of voltage regulation devices ~~from~~of the clamp circuit to lower the clamping threshold of the clamp circuit, the voltage regulator generating a ~~second~~third control signal responsive to the lowered clamping threshold of the clamp circuit to cause the charge pump to generate the internal supply voltage at an operational magnitude having a reduced differential magnitude with respect to magnitude of the external supply voltage.

Appl. No. : **09/989,563**
Filed : **November 19, 2001**

26. (New) The device of Claim 1, wherein the second control signal controls the charge pump in response to a change in voltage of the first control signal.

27. (New) The device of Claim 4, wherein the second control signal controls the charge pump in response to a change in voltage of the first control signal.

28. (New) The device of Claim 15, wherein the second control signal controls the charge pump in response to a change in voltage of the first control signal.

29. (New) The device of Claim 25, wherein the second control signal controls the charge pump in response to a change in voltage of the first control signal.